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FOREST STATISTICS OF CENTRAL KENTUCKY

CENTRAL STATES
FOREST EXPERIMENT STATION
Columbus 15, Ohio

Harold L. Mitchell, Director

FOREST SURVEY RELEASE NO. 9

JUNE 1950

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FOREST STATISTICS OF CENTRAL KENTUCKY

By

THE FOREST SURVEY ORGANIZATION
Central States Forest Experiment Station

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FOREWORD

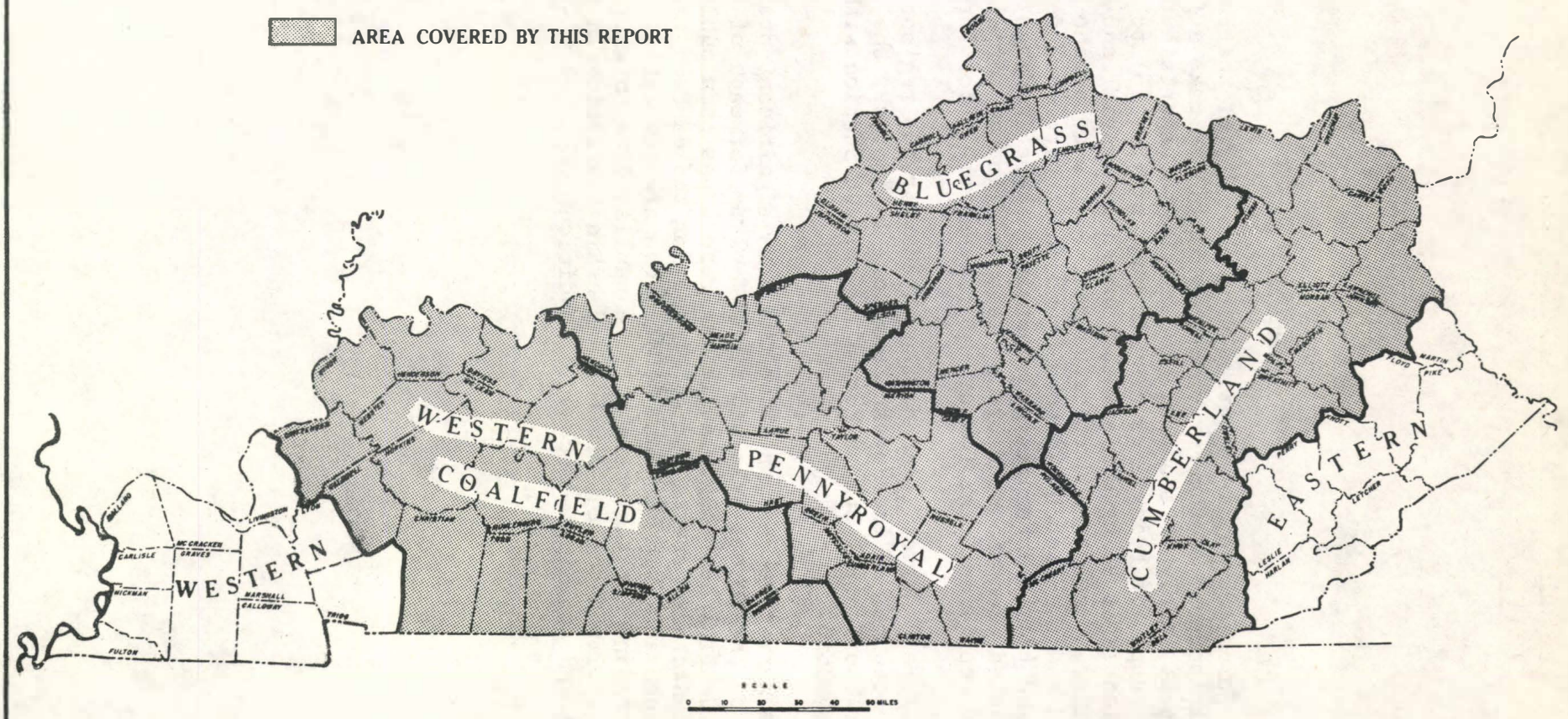
The Forest Survey is a nation-wide activity of the Forest Service. The fivefold purpose of the Forest Survey is (1) to make a field inventory of the present supply of standing timber; (2) to ascertain the rate at which this supply is being increased through growth; (3) to determine the rate at which it is being diminished through industrial and domestic uses, windfall, fire, disease, and other causes; (4) to determine the present consumption and the probable future trend in requirements for forest products; and (5) to interpret and correlate these findings with existing and anticipated economic conditions, as an aid in the formulation of both private and public policies for use of land suitable for forest production.

The Forest Survey is conducted in the various regions by the forest experiment stations of the Forest Service. In Kentucky the project is directed by the Central States Forest Experiment Station with headquarters in Columbus, Ohio.

This Survey Release presents the more significant preliminary statistics on the forest area and timber volume for each of the four regions of Central Kentucky. A similar report has been published for the Western Kentucky region and a release for the eastern region will be issued as soon as field work and tabulations are completed. Later an analytical report for the state will be published which will interpret forest area, timber-volume, growth, and drain statistics in the light of existing and anticipated economic conditions.

LOCATION OF FOREST SURVEY REGIONS IN KENTUCKY

AREA COVERED BY THIS REPORT



SIGNIFICANT FOREST STATISTICS FOR CENTRAL KENTUCKY

Central Kentucky, as defined in this report, includes four principal subdivisions or regions. These have been established in such a way as to group counties that have similar forest, soil, and economic conditions. Although local regional names have been given to each, the areas included do not necessarily coincide with local terminology. For example, the southern portion of the Western Coalfield region includes several counties frequently classified as Western Pennyroyal. In general, the terrain of Central Kentucky slopes gradually upward from the west to the adjacent mountainous area on the east. The rivers that drain this area flow into the Ohio. A brief description of the physiographic and economic characteristics of each region follows.

Western Coalfield.--This is an area of gently to sharply rolling hills where the elevation varies from 350 to 700 feet. The central portion is the most hilly and more gently rolling areas are found along the Ohio River and toward the Tennessee line. Agriculture and coal mining are important activities. Tobacco, livestock, and general farm crops are produced.

Pennyroyal.--The soft limestone underlying much of this hilly area has in places dissolved, causing sink holes and extensive drainage. Accordingly, the area is generally drier than other parts of the state. This, together with a hilly terrain, results in a less productive agriculture and an increased proportion of forest land.

Bluegrass.--The rich Inner Bluegrass is characterized by a productive agriculture based largely on grazing and tobacco growing. This is the area of large estates and is the "story book" portion of the state. Surrounding this area is a less fertile hilly fringe (Outer Bluegrass) given principally to livestock raising. The soils of this fringe are thin, relatively unproductive, and easily eroded. Farm values are consequently lower than in the Inner Bluegrass.

Cumberland.--This is an area of rough, almost mountainous topography. It is heavily forested, and successful agriculture is restricted to small, scattered farms on the lower slopes and stream bottoms. Elevation ranges from 500 to 2,000 feet.

The total land area of Central Kentucky is 21.3 million acres, of which 9.0 million acres or 42 percent is forested. In general, the counties in the Bluegrass region have the smallest forest area--in some counties as small as 2 to 4 percent of the land area. For the most part, the counties in the Cumberland region have the highest proportion of forest land, ranging as high as 90 percent. The forest area of counties in the Western Coalfield and Pennyroyal regions varies generally from one-third to one-half of the total land area.

The forest land ownership is almost entirely private, 93 percent. The Cumberland National Forest, the Mammoth Cave National Park, and state forests account for most of the remaining 7 percent.

Throughout Central Kentucky the oak-hickory and mixed-hardwood types predominate and together make up 70 to 75 percent of the commercial forest area. Although some pine is found in all parts of the area, it is most important commercially in the Cumberland region where the pine and oak-pine types occupy 19 percent of the commercial forest area.

Stands of saw-timber size and quality make up 38 percent of the total commercial forest area. However, in the Bluegrass region saw-timber stands occupy less than 20 percent of the commercial forest area. Considering all regions, pole timber predominates on about 40 percent of the commercial forest area and seedling and sapling on 15 percent. The remaining 7 percent is classified as nonstocked.

The total volume of saw timber in Central Kentucky is 16.9 billion board feet. Of this total, 3.7 billion board feet are in the Western Coalfield region, 4.3 billion in the Pennyroyal region, 1.3 in the Bluegrass, and 7.6 in the Cumberland. The oaks make up more than 45 percent of this volume. Hickory with 10 percent and yellow-poplar with 7 percent are also important. More than 80 percent of the saw-timber volume is found in stands classified as saw timber. Nearly all of the remaining saw-timber volume occurs in scattered trees in pole-timber stands. Forty-two percent of the saw-timber volume occurs in trees 12 to 14 inches d.b.h. and 26 percent is in trees 20 inches d.b.h. or larger.

The proportion of the saw-timber volume in high-quality logs is very low. Only 13 percent of the hardwood volume is in grade 1 and 2 logs, from which come the high-quality material required by the veneer, furniture, and cooperage industries. This condition is partly due to the large proportion of small saw-timber trees in the stand. The practice of cutting only the best trees and leaving the lower-quality trees also contributes to this condition.

The volume of the total forest growing stock is 4.9 billion cubic feet. Of this 2.7 billion cubic feet are in the sawlog portion of saw-timber trees and 2.2 billion in trees of pole-timber size. In addition to this growing stock 3.0 billion cubic feet are found in tops and limbs of saw-timber trees and in the sound portion of cull trees and trees of noncommercial species.

The average volume of saw timber per acre on all commercial forest land in Central Kentucky is 1,897 board feet. By regions these average board-foot volumes per acre vary as follows: Western Coalfield, 2,148; Pennyroyal, 2,045; Bluegrass, 1,038; and Cumberland, 1,974. Large saw-timber stands averaged 5,237 board feet per acre, and those classified as small saw timber averaged 3,098 board feet per acre. The average volume per acre of growing stock on commercial forest land was 549 cubic feet.

Table 1.--Forest and nonforest area by county, 1949

County	Total land area[1]	Forest area		Nonforest area	
	Thousand acres	Thousand acres	Percent	Thousand acres	Percent
Allen	233	81	35	152	65
Barren	311	68	22	243	78
Butler	284	127	45	157	55
Caldwell	228	84	37	144	63
Christian	465	135	29	330	71
Crittenden	234	93	40	141	60
Daviess	298	63	21	235	79
Edmondson	195	116	59	79	41
Henderson	282	53	19	229	81
Hopkins	355	167	47	188	53
Logan	360	106	29	254	71
McLean	164	45	27	119	73
Monroe	214	101	47	113	53
Muhlenberg	308	134	44	174	56
Ohio	381	150	39	231	61
Simpson	153	19	12	134	88
Todd	241	64	27	177	73
Union	220	37	17	183	83
Warren	349	86	25	263	75
Webster	217	63	29	154	71
All counties	5,492	1,792	33	3,700	67

1/ Source: Area of United States 1940, U. S. Bureau of the Census.

Table 2.--Commercial forest area by ownership class, 1949

Ownership class	Commercial forest area 1/	
	Thousand acres	Percent
Federal:		
National forest	0	0.0
Other	4	.2
Total	4	.2
State	15	.9
Private	1,731	98.9
All ownerships	1,750	100.0

1/ Does not include 40,000 acres of forest land in Mammoth Cave National Park and 2,000 acres in state and municipal ownerships that are reserved from commercial timber use.

Table 3.--Commercial forest area by forest type and stand-size class, 1949

Forest type	Total		Large saw-timber area	Small saw-timber area	Pole-timber area	Seedling and sapling area	Non-stocked area
	Thousand acres	Percent	Thousand acres				
Pine	10	0.6	--	--	5	5	--
Cedar-hardwoods	51	2.9	--	--	37	14	--
Oak-pine	9	.5	--	4	--	--	5
Oak-hickory	790	45.1	124	157	314	103	92
White oak	88	5.0	10	38	40	--	--
Beech-maple	77	4.4	31	24	10	8	4
Mixed hardwoods	489	28.0	100	76	191	87	35
Bottomland hdwds.	236	13.5	105	52	62	9	8
All types	1,750		370	351	659	226	144
Percent		100.0	21.1	20.1	37.7	12.9	8.2

Table 4.--Saw-timber volume by species and stand-size class, 1949

Species	Total		Large saw-timber area	Small saw-timber area	Pole-timber area	Seedling and sapling area 1/
	Million bd. ft.	Percent	Million board feet			
Softwoods 2/	27	0.7	17	5	5	--
White oak	524	13.9	269	175	72	8
Post-oak group	187	5.0	113	27	31	16
Chestnut oak	35	.9	5	26	1	3
Black oak	581	15.4	305	190	78	8
Northern red oak	264	7.0	166	73	24	1
Other red oaks	312	8.3	224	63	25	--
Hickory	329	8.7	111	170	33	15
Elm	113	3.0	71	21	17	4
Soft maple	112	3.0	61	22	29	--
Sugar maple	89	2.4	67	12	6	4
Sycamore	85	2.3	61	15	8	1
Ash	115	3.1	73	38	4	--
Yellow-poplar	174	4.6	123	17	34	--
Cottonwood	68	1.8	56	1	10	1
Sweetgum	243	6.5	155	49	36	3
Blackgum	44	1.2	30	11	3	--
Beech	296	7.9	196	78	11	11
Black walnut	40	1.1	17	21	2	--
Other hardwoods	121	3.2	67	27	23	4
All species	3,759		2,187	1,041	452	79
Percent		100.0	58.2	27.7	12.0	2.1

1/ Includes the volume in nonstocked areas.
2/ Includes approximately equal volumes of redcedar, Virginia pine, and cypress.

Table 5.--Saw-timber volume by species and tree-diameter class, 1949

(in Million board feet)

Species	Total	10 inches	12-14 inches	16-18 inches	20-22 inches	24-26 inches	28 inches and larger
	Million board feet						
Softwoods	27	6	9	2	3	--	7
White oak	524	--	249	129	54	38	54
Post-oak group	187	--	73	49	54	6	5
Chestnut oak	35	--	21	14	--	--	--
Black oak	581	--	223	151	83	101	23
Northern red oak	264	--	79	83	40	19	43
Other red oaks	312	--	83	90	79	31	29
Hickory	329	--	165	119	19	26	--
Elm	113	--	45	19	23	14	12
Soft maple	112	--	60	39	9	2	2
Sugar maple	89	--	23	16	25	--	25
Sycamore	85	--	14	20	25	12	14
Ash	115	--	41	28	13	9	24
Yellow-poplar	174	--	70	66	23	15	--
Cottonwood	68	--	13	31	15	9	--
Sweetgum	243	--	102	88	33	20	--
Blackgum	44	--	19	13	6	6	--
Beech	296	--	77	81	88	40	10
Black walnut	40	--	22	16	2	--	--
Other hardwoods	121	--	69	29	9	--	14
All species	3,759	6	1,457	1,083	603	348	262
Percent	100.0	.2	38.8	28.8	16.0	9.2	7.0

Table 6.--Hardwood saw-timber volume by species group and percentage distribution in log grades, 1949

Species group	Volume	Log grade 1	Log grade 2	Log grade 3
	Million bd. ft.	Percent		
White oaks[1/]	746	4.5	8.2	87.3
Red oaks[2/]	1,157	6.6	11.7	81.7
Other hardwoods	1,829	6.1	9.3	84.6
All hardwoods	3,732	6.0	9.8	84.2

1/ Includes white oak, chestnut oak, and post-oak group.
2/ Includes black oak, northern red oak, and other red oaks.

Table 7.--Total cubic volume of sound wood by species and class of material, 1949

Species	Total	Growing stock			Tops & limbs	Cull trees
		Total	Saw-timber trees	Pole-timber trees		
	Million cubic feet					
Softwoods	15.2	15.2	1/6.3	8.9	--	--
White oak	214.3	147.8	81.2	66.6	57.4	9.1
Post-oak group	107.6	64.4	30.0	34.4	21.4	21.8
Chestnut oak	15.3	10.3	5.8	4.5	4.2	.8
Black oak	211.2	134.6	91.9	42.7	65.5	11.1
Northern red oak	83.4	53.3	40.9	12.4	28.9	1.2
Other red oaks	110.8	67.9	48.7	19.2	34.7	8.2
Hickory	174.9	125.4	52.8	72.6	37.7	11.8
Elm	79.7	52.2	17.8	34.4	12.6	14.9
Soft maple	68.8	35.2	18.0	17.2	12.9	20.7
Sugar maple	52.5	31.1	13.6	17.5	9.7	11.7
Sycamore	32.7	20.8	12.8	8.0	9.1	2.8
Ash	66.8	40.0	18.8	21.2	13.8	13.0
Yellow-poplar	69.8	41.4	27.4	14.0	19.4	9.0
Cottonwood	21.7	12.2	10.7	1.5	7.6	1.9
Sweetgum	115.4	79.0	38.5	40.5	27.2	9.2
Blackgum	30.9	17.4	7.6	9.8	5.4	8.1
Beech	136.2	54.7	44.9	9.8	34.0	47.5
Black walnut	23.8	16.4	6.6	9.8	4.7	2.7
Other hardwoods	105.7	68.7	19.6	49.1	14.1	22.9
Noncommercial species	5.5	--	--	--	--	5.5
All species	1,742.2	1,088.0	593.9	494.1	420.3	233.9
Percent	100.0	62.5	34.1	28.4	24.1	13.4

1/ Includes tops of softwood saw-timber trees to a minimum diameter of 4 inches inside bark.

Table 8.--Cubic volume of growing stock by species and stand-size class, 1949

Species	Total		Large saw-timber area	Small saw-timber area	Pole-timber area	Seedling and sapling area [1]
	Million cu. ft.	Percent	Million cubic feet			
Softwoods	15.2	1.4	4.4	2.0	8.8	—
White oak	147.8	13.6	45.6	54.5	43.4	4.3
Post-oak group	64.4	5.9	21.4	11.1	27.9	4.0
Chestnut oak	10.3	1.0	1.4	6.2	1.9	.8
Black oak	134.6	12.4	52.1	40.5	39.2	2.8
Northern red oak	53.3	4.9	28.7	17.3	7.1	.2
Other red oaks	67.9	6.2	38.5	16.1	12.1	1.2
Hickory	125.4	11.5	30.8	49.0	41.3	4.3
Elm	52.2	4.8	17.5	10.5	19.7	4.5
Soft maple	35.2	3.2	15.9	7.4	11.7	.2
Sugar maple	31.1	2.9	15.7	8.9	5.5	1.0
Sycamore	20.8	1.9	9.6	3.5	7.0	.7
Ash	40.0	3.7	17.8	13.8	7.3	1.1
Yellow-poplar	41.4	3.8	21.2	6.0	13.3	.9
Cottonwood	12.2	1.1	9.6	.3	2.2	.1
Sweetgum	79.0	7.3	29.2	20.0	29.3	.5
Blackgum	17.4	1.6	8.5	5.7	3.0	.2
Beech	54.7	5.0	33.4	15.6	4.0	1.7
Black walnut	16.4	1.5	6.5	6.1	2.8	1.0
Other hardwoods	68.7	6.3	19.3	12.2	35.2	2.0
All species	1,088.0		427.1	306.7	322.7	31.5
Percent		100.0	39.3	28.2	29.7	2.8

1/ Includes the volume in nonstocked areas.

Table 9.--Cubic volume of growing stock by stand-size class and tree-diameter class, 1949

Stand-size class	Total	6-8 inches	10 inches	12-14 inches	16-18 inches	20-22 inches	24-26 inches	28 inches and larger
	Million cubic feet							
Large saw-timber area	427.1	51.0	39.7	68.5	106.6	78.4	45.5	37.4
Small saw-timber area	306.7	72.2	65.0	118.7	42.2	6.0	2.6	--
Pole-timber area	322.7	153.1	96.5	48.9	18.6	4.3	.8	.5
Seedling and sapling area 1/	31.5	11.1	7.8	6.7	1.5	2.0	2.4	--
All classes	1,088.0	287.4	209.0	242.8	168.9	90.7	51.3	37.9
Percent	100.0	26.4	19.2	22.3	15.5	8.4	4.7	3.5

1/ Includes the volume in nonstocked areas.

Table 10.--Average volume per acre by stand-size class, 1949

Stand-size class	Average volume per acre	
	Board feet	Cubic feet 1/
Large saw-timber area	5,911	1,154.3
Small saw-timber area	2,966	873.8
Pole-timber area	686	489.7
Seedling and sapling 2/	214	85.1
All classes	2,148	621.7

1/ Growing stock only.
2/ Includes the volume in nonstocked areas.

Table 1.--Forest and nonforest area by county, 1949

County	Total land area[1]	Forest area		Nonforest area	
	Thousand acres	Thousand acres	Percent	Thousand acres	Percent
Adair	252	108	43	144	57
Breckenridge	362	148	41	214	59
Bullitt	192	103	54	89	46
Casey	278	155	56	123	44
Clinton	132	62	47	[2]70	53
Cumberland	200	108	54	[2]92	46
Grayson	329	133	40	196	60
Green	180	57	32	123	68
Hancock	120	53	44	67	56
Hardin	394	148	38	246	62
Hart	272	118	43	154	57
Larue	166	54	33	112	67
Marion	220	82	37	138	63
Meade	197	75	38	122	62
Metcalfe	189	77	41	112	59
Nelson	280	105	38	175	62
Pulaski	433	209	48	[2]224	52
Russell	180	76	42	[2]104	58
Taylor	182	68	37	114	63
Wayne	310	180	58	[2]130	42
All counties	4,868	2,119	44	2,749	56

1/ Source: Area of United States 1940, U. S. Bureau of the Census.
2/ Includes area of Wolf Creek and Dale Hollow Reservoirs.

Table 2.--Commercial forest area by ownership class, 1949

Ownership class	Commercial forest area[1/]	
	Thousand acres	Percent
Federal:		
National forest	38	1.8
Other	123	5.8
Total	161	7.6
State	0	.0
Private	1,951	92.4
All ownerships	2,112	100.0

1/ Does not include 5,000 acres of forest land in Mammoth Cave National Park and 2,000 acres in county and municipal ownerships that are reserved from commercial timber use.

Table 3.--Commercial forest area by forest type and stand-size class, 1949

Forest type	Total		Large saw-timber area	Small saw-timber area	Pole-timber area	Seedling and sapling area	Non-stocked area
	Thousand acres	Percent	Thousand acres				
Pine	47	2.2	--	21	16	10	--
Cedar-hardwoods	196	9.3	6	16	144	30	--
Oak-pine	73	3.5	6	20	16	21	10
Oak-hickory	930	44.0	142	225	397	136	30
White oak	61	2.9	4	24	33	--	--
Beech-maple	184	8.7	97	32	49	6	--
Mixed hardwoods	570	27.0	126	118	190	105	31
Bottomland hdwds.	51	2.4	29	16	6	--	--
All types	2,112		410	472	851	308	71
Percent		100.0	19.4	22.3	40.3	14.6	3.4

Table 4.--Saw-timber volume by species and stand-size class, 1949

Species	Total		Large saw-timber area	Small saw-timber area	Pole-timber area	Seedling and sapling area [1]
	Million bd. ft.	Percent	Million board feet			
Virginia pine	135	3.1	--	94	39	2
Shortleaf pine	76	1.8	23	53	--	--
Redcedar-hemlock	69	1.6	29	6	34	--
White oak	467	10.8	182	194	73	18
Post-oak group	120	2.8	40	27	51	2
Chestnut oak	129	3.0	76	29	24	--
Black oak	644	14.9	278	226	127	13
Northern red oak	267	6.2	105	100	60	2
Other red oaks	162	3.7	95	52	15	--
Hickory	476	11.0	221	150	101	4
Elm	73	1.7	36	35	2	--
Soft maple	33	.8	13	18	2	--
Sugar maple	187	4.3	114	46	11	16
Sycamore	91	2.1	47	21	23	--
Ash	72	1.7	38	24	10	--
Yellow-poplar	322	7.5	191	84	47	--
Sweetgum	36	.8	13	20	2	1
Blackgum	73	1.7	28	22	18	5
Beech	703	16.3	543	116	40	4
Black walnut	65	1.5	35	17	11	2
Other hardwoods	118	2.7	51	47	17	3
All species	4,318		2,158	1,381	707	72
Percent		100.0	50.0	32.0	16.4	1.6

1/ Includes the volume in nonstocked areas.

Table 5.--Saw-timber volume by species and tree-diameter class, 1949

Species	Total	10 inches	12-14 inches	16-18 inches	20-22 inches	24-26 inches	28 inches and larger
	Million board feet						
Virginia pine	135	48	84	3	--	--	--
Shortleaf pine	76	3	22	28	23	--	--
Redcedar-hemlock	69	25	18	13	5	8	--
White oak	467	--	282	129	34	--	22
Post-oak group	120	--	73	38	4	5	--
Chestnut oak	129	--	61	43	9	16	--
Black oak	644	--	317	219	81	27	--
Northern red oak	267	--	110	97	23	37	--
Other red oaks	162	--	63	76	6	17	--
Hickory	476	--	265	140	29	42	--
Elm	73	--	32	14	20	3	4
Soft maple	33	--	19	14	--	--	--
Sugar maple	187	--	71	39	42	21	14
Sycamore	91	--	19	22	18	6	26
Ash	72	--	28	33	11	--	--
Yellow-poplar	322	--	132	123	57	10	--
Sweetgum	36	--	11	15	--	--	10
Blackgum	73	--	48	19	6	--	--
Beech	703	--	153	192	168	142	48
Black walnut	65	--	33	13	19	--	--
Other hardwoods	118	--	54	16	19	20	9
All species	4,318	76	1,895	1,286	574	354	133
Percent	100.0	1.7	43.9	29.8	13.3	8.2	3.1

Table 6.--Hardwood saw-timber volume by species group and percentage distribution in log grades, 1949

Species group	Volume	Log grade 1	Log grade 2	Log grade 3
	Million bd. ft.	Percent		
White oaks[1/]	716	1.0	10.0	89.0
Red oaks[2/]	1,073	2.1	9.3	88.6
Other hardwoods	2,249	2.6	9.8	87.6
All hardwoods	4,038	2.2	9.7	88.1

1/ Includes white oak, chestnut oak, and post-oak group.
2/ Includes black oak, northern red oak, and other red oaks.

Table 7.--Total cubic volume of sound wood by species and class of material, 1949

Species	Total	Growing stock			Tops & limbs	Cull trees
		Total	Saw-timber trees	Pole-timber trees		
	Million cubic feet					
Virginia pine	34.7	34.3	1/ 24.6	9.7	—	0.4
Shortleaf pine	13.1	12.8	1/ 11.8	1.0	—	.3
Redcedar-hemlock	35.3	34.4	1/ 18.0	16.4	—	.9
White oak	214.3	151.6	73.7	77.9	52.2	10.5
Post-oak group	85.0	56.2	19.3	36.9	13.8	15.0
Chestnut oak	86.1	55.8	20.5	35.3	14.6	15.7
Black oak	256.4	166.9	103.1	63.8	73.7	15.8
Northern red oak	95.4	61.8	42.6	19.2	30.4	3.2
Other red oaks	56.6	35.3	25.8	9.5	18.4	2.9
Hickory	234.3	160.2	74.7	85.5	53.8	20.3
Elm	39.5	28.6	11.5	17.1	8.2	2.7
Soft maple	30.1	16.9	5.3	11.6	3.8	9.4
Sugar maple	96.3	62.0	29.1	32.9	21.0	13.3
Sycamore	29.6	15.5	13.8	1.7	10.0	4.1
Ash	49.0	34.5	11.7	22.8	8.3	6.2
Yellow-poplar	108.1	67.4	50.1	17.3	35.5	5.2
Sweetgum	12.5	7.1	5.7	1.4	4.1	1.3
Blackgum	44.5	29.9	11.9	18.0	8.5	6.1
Beech	320.9	126.6	104.6	22.0	80.1	114.2
Black walnut	32.6	20.2	10.4	9.8	7.4	5.0
Other hardwoods	83.6	52.3	18.8	33.5	13.4	17.9
Noncommercial species	8.7	—	—	—	—	8.7
All species	2/ 1,966.6	1,230.3	687.0	543.3	457.2	279.1
Percent	100.0	62.5	34.9	27.6	23.3	14.2

1/ Includes tops of softwood saw-timber trees to a minimum diameter of 4 inches inside bark.

2/ Does not include volume of standing dead chestnut estimated to be 9.5 million cubic feet.

Table 8.--Cubic volume of growing stock by species and stand-size class, 1949

Species	Total		Large saw-timber area	Small saw-timber area	Pole-timber area	Seedling and sapling area [1]
	Million cu. ft.	Percent	Million cubic feet			
Virginia pine	34.3	2.8	--	20.7	13.2	0.4
Shortleaf pine	12.8	1.0	3.4	8.8	0.4	.2
Redcedar-hemlock	34.4	2.8	5.5	3.6	25.2	.1
White oak	151.6	12.3	38.8	61.3	48.4	3.1
Post-oak group	56.2	4.6	7.7	13.7	33.8	1.0
Chestnut oak	55.8	4.5	20.4	12.3	23.1	--
Black oak	166.9	13.6	52.8	54.6	55.3	4.2
Northern red oak	61.8	5.0	19.3	23.2	19.0	.3
Other red oaks	35.3	2.9	18.4	11.9	5.0	--
Hickory	160.2	13.0	48.5	51.3	58.3	2.1
Elm	28.6	2.3	10.2	9.3	9.0	.1
Soft maple	16.9	1.4	6.2	6.7	4.0	--
Sugar maple	62.0	5.0	27.7	18.5	13.5	2.3
Sycamore	15.5	1.3	7.9	3.6	4.0	--
Ash	34.5	2.8	9.0	7.6	16.9	1.0
Yellow-poplar	67.4	5.5	32.7	18.3	16.4	--
Sweetgum	7.1	.6	2.1	4.1	.5	.4
Blackgum	29.9	2.4	9.1	7.4	9.8	3.6
Beech	126.6	10.3	88.7	25.7	10.4	1.8
Black walnut	20.2	1.6	8.0	4.6	7.2	.4
Other hardwoods	52.3	4.3	16.0	17.4	18.0	.9
All species	1,230.3		432.4	384.6	391.4	21.9
Percent		100.0	35.1	31.3	31.8	1.8

1/ Includes the volume in nonstocked areas.

Table 9.--Cubic volume of growing stock by stand-size class and tree-diameter class, 1949

Stand-size class	Total	6-8 inches	10 inches	12-14 inches	16-18 inches	20-22 inches	24-26 inches	28 inches and larger
	Million cubic feet							
Large saw-timber area	432.4	53.5	48.9	72.4	122.5	69.9	49.9	15.3
Small saw-timber area	384.6	84.2	82.3	155.6	53.7	8.4	.4	--
Pole-timber area	391.4	167.3	114.4	82.2	18.3	5.2	--	4.0
Seedling and sapling area[1]	21.9	4.4	6.7	3.9	4.0	1.6	1.3	--
All classes	1,230.3	309.4	252.3	314.1	198.5	85.1	51.6	19.3
Percent	100.0	25.2	20.5	25.5	16.1	6.9	4.2	1.6

1/ Includes the volume in nonstocked areas.

Table 10.--Average volume per acre by stand-size class, 1949

Stand-size class	Average volume per acre	
	Board feet	Cubic feet[1]
Large saw-timber area	5,263	1,054.6
Small saw-timber area	2,926	814.8
Pole-timber area	831	459.9
Seedling and sapling area[2]	190	57.8
All classes	2,045	582.5

1/ Growing stock only.
2/ Includes the volume in nonstocked areas.

Table 1.--Forest and nonforest area by county, 1949

County	Total land area1/	Forest area		Nonforest area	
	Thousand acres	Thousand acres	Percent	Thousand acres	Percent
Anderson	132	33	25	99	75
Bath	184	64	35	120	65
Boone	161	38	24	123	76
Bourbon	192	4	2	188	98
Boyle	116	25	22	91	78
Bracken	132	37	28	95	72
Campbell	97	28	29	69	71
Carroll	84	26	31	58	69
Clark	166	21	13	145	87
Fayette	179	7	4	172	96
Fleming	224	68	30	156	70
Franklin	135	46	34	89	66
Gallatin	64	17	27	47	73
Garrard	150	25	17	125	83
Grant	160	34	21	126	79
Harrison	197	37	19	160	81
Henry	185	39	21	146	79
Jefferson	240	52	22	188	78
Jessamine	113	9	8	104	92
Kenton	106	24	23	82	77
Lincoln	218	60	28	158	72
Madison	285	52	18	233	82
Mason	153	24	16	129	84
Mercer	164	22	13	142	87
Montgomery	131	25	19	106	81
Nicholas	130	26	20	104	80
Oldham	118	27	23	91	77
Owen	225	89	40	136	60
Pendleton	178	62	35	116	65
Robertson	65	17	26	48	74

Table 1.--Forest and nonforest area by county, 1949, continued

County	Total land area 1/	Forest area		Nonforest area	
	Thousand acres	Thousand acres	Percent	Thousand acres	Percent
Scott	182	30	16	152	84
Shelby	246	26	11	220	89
Spencer	123	23	19	100	81
Trimble	93	48	52	45	48
Washington	196	42	21	154	79
Woodford	123	14	11	109	89
All counties	5,647	1,221	22	4,426	78

1/ Source: Area of United States 1940, U. S. Bureau of the Census.

Table 2.--Commercial forest area by ownership class, 1949

Ownership class	Commercial forest area 1/	
	Thousand acres	Percent
Federal:		
National forest	14	1.1
Other	0	.0
Total	14	1.1
State	0	.0
Private	1,207	98.9
All ownerships	1,221	100.0

1/ Does not include forest area of less than 500 acres reserved from commercial timber use for state parks.

Table 3.--Commercial forest area by forest type and stand-size class, 1949

Forest type	Total		Large saw-timber area	Small saw-timber area	Pole-timber area	Seedling and sapling area	Non-stocked area
	Thousand acres	Percent	Thousand acres				
Pine	19	1.6	--	19	--	--	--
Cedar-hardwoods	197	16.1	--	3	82	69	43
Oak-pine	26	2.1	--	5	12	9	--
Oak-hickory	237	19.4	17	55	117	22	26
White oak	12	1.0	--	3	9	--	--
Beech-maple	7	.6	3	4	--	--	--
Mixed hardwoods	690	56.5	43	42	343	144	118
Bottomland hdwds.	33	2.7	11	7	10	--	5
All types	1,221		74	138	573	244	192
Percent		100.0	6.1	11.3	46.9	20.0	15.7

Table 4.--Saw-timber volume by species and stand-size class, 1949

Species	Total		Large saw-timber area	Small saw-timber area	Pole-timber area	Seedling and sapling area [1]
	Million bd. ft.	Percent	Million board feet			
Virginia pine	80	6.3	--	79	--	1
Shortleaf pine	35	2.8	--	31	4	--
Redcedar	15	1.2	--	4	11	--
White oak	162	12.8	64	58	32	8
Post-oak group	76	6.0	61	9	6	--
Chestnut oak	46	3.6	--	32	14	--
Black oak	75	5.9	20	33	21	1
Northern red oak	102	8.0	36	29	37	--
Other red oaks	32	2.5	17	2	13	--
Hickory	85	6.7	4	53	24	4
Elm	62	4.9	17	12	29	4
Soft maple	6	.5	4	2	--	--
Sugar maple	27	2.1	8	15	4	--
Sycamore	68	5.4	36	8	23	1
Ash	70	5.5	10	33	26	1
Yellow-poplar	57	4.5	31	11	12	3
Sweetgum	6	.5	5	--	1	--
Blackgum	8	.6	1	7	--	--
Beech	25	2.0	19	6	--	--
Black walnut	41	3.2	18	3	13	7
Other hardwoods	190	15.0	36	70	78	6
All species	1,268		387	497	348	36
Percent		100.0	30.5	39.2	27.4	2.9

1/ Includes the volume in nonstocked areas.

Table 5.--Saw-timber volume by species and tree-diameter class, 1949

Species	Total	10 inches	12-14 inches	16-18 inches	20-22 inches	24-26 inches	28 inches and larger
	Million board feet						
Virginia pine	80	28	46	6	—	—	—
Shortleaf pine	35	11	16	—	8	—	—
Redcedar	15	7	6	2	—	—	—
White oak	162	—	80	40	20	22	—
Post-oak group	76	—	41	35	—	—	—
Chestnut oak	46	—	23	14	5	4	—
Black oak	75	—	27	28	20	—	—
Northern red oak	102	—	25	46	31	—	—
Other red oaks	32	—	8	7	4	13	—
Hickory	85	—	65	20	—	—	—
Elm	62	—	41	4	9	2	6
Soft maple	6	—	3	—	3	—	—
Sugar maple	27	—	13	14	—	—	—
Sycamore	68	—	30	17	4	11	6
Ash	70	—	28	11	14	11	6
Yellow-poplar	57	—	23	22	5	7	—
Sweetgum	6	—	1	2	3	—	—
Blackgum	8	—	1	1	6	—	—
Beech	25	—	6	16	3	—	—
Black walnut	41	—	28	5	8	—	—
Other hardwoods	190	—	99	46	36	9	—
All species	1,268	46	610	336	179	79	18
Percent	100.0	3.6	48.1	26.5	14.1	6.3	1.4

Table 6.--Hardwood saw-timber volume by species group and percentage distribution in log grades, 1949

Species group	Volume	Log grade 1	Log grade 2	Log grade 3
	Million bd. ft.	Percent		
White oaks[1/]	284	--	11.3	88.7
Red oaks[2/]	209	3.3	7.2	89.5
Other hardwoods	645	6.5	5.1	88.4
All hardwoods	1,138	4.3	7.0	88.7

1/ Includes white oak, chestnut oak, and post-oak group.
2/ Includes black oak, northern red oak, and other red oaks.

Table 7.--Total cubic volume of sound wood by species and class of material, 1949

Species	Total	Growing stock			Tops & limbs	Cull trees
		Total	Saw-timber trees	Pole-timber trees		
	Million cubic feet					
Virginia pine	24.0	24.0	1/ 14.7	9.3	--	--
Shortleaf pine	8.8	8.8	1/ 6.1	2.7	--	--
Redcedar	14.4	14.0	1/ 4.3	9.7	--	0.4
White oak	69.1	47.0	25.2	21.8	17.9	4.2
Post-oak group	29.6	20.6	12.3	8.3	8.8	.2
Chestnut oak	22.8	16.4	7.4	9.0	5.3	1.1
Black oak	36.6	20.2	11.9	8.3	8.5	7.9
Northern red oak	33.7	20.8	16.1	4.7	11.5	1.4
Other red oaks	13.8	10.3	4.9	5.4	3.5	--
Hickory	61.4	48.0	13.6	34.4	9.8	3.6
Elm	63.0	37.9	10.1	27.8	7.2	17.9
Soft maple	7.1	4.0	.9	3.1	.6	2.5
Sugar maple	18.3	11.4	4.2	7.2	3.0	3.9
Sycamore	26.5	18.0	10.6	7.4	7.6	.9
Ash	46.8	32.4	11.1	21.3	8.0	6.4
Yellow-poplar	18.1	11.6	8.9	2.7	6.3	.2
Sweetgum	1.7	1.1	.9	.2	.6	--
Blackgum	5.3	3.3	1.3	2.0	.9	1.1
Beech	14.2	4.9	3.8	1.1	2.9	6.4
Black walnut	32.1	24.3	6.7	17.6	4.8	3.0
Other hardwoods	139.7	93.7	30.5	63.2	21.7	24.3
Noncommercial species	7.3	--	--	--	--	7.3
All species	2/ 694.3	472.7	205.5	267.2	128.9	92.7
Percent	100.0	68.1	29.6	38.5	18.5	13.4

1/ Includes tops of softwood saw-timber trees to a minimum diameter of 4 inches inside bark.

2/ Does not include volume of standing dead chestnut estimated to be 2.7 million cubic feet.

Table 8.--Cubic volume of growing stock by species and stand-size class, 1949

Species	Total		Large saw-timber area	Small saw-timber area	Pole-timber area	Seedling and sapling area 1/
	Million cu. ft.	Percent	Million cubic feet			
Virginia pine	24.0	5.1	--	23.6	0.1	0.3
Shortleaf pine	8.8	1.9	--	6.7	2.1	--
Redcedar	14.0	3.0	--	1.4	9.9	2.7
White oak	47.0	9.9	11.8	14.6	17.9	2.7
Post-oak group	20.6	4.4	10.1	4.1	6.2	.2
Chestnut oak	16.4	3.5	--	6.1	10.3	--
Black oak	20.2	4.3	3.0	8.5	8.5	.2
Northern red oak	20.8	4.4	6.6	5.3	8.9	--
Other red oaks	10.3	2.2	2.9	.3	6.9	.2
Hickory	48.0	10.2	2.5	14.3	28.7	2.5
Elm	37.9	8.0	4.7	5.5	24.7	3.0
Soft maple	4.0	.8	1.5	1.7	.4	.4
Sugar maple	11.4	2.4	2.3	4.4	4.4	.3
Sycamore	18.0	3.8	5.5	2.4	8.2	1.9
Ash	32.4	6.9	2.6	7.0	21.8	1.0
Yellow-poplar	11.6	2.4	6.7	1.7	2.7	.5
Sweetgum	1.1	.2	.8	.2	.1	--
Blackgum	3.3	.7	.4	2.1	.2	.6
Beech	4.9	1.0	3.0	1.8	.1	--
Black walnut	24.3	5.1	4.9	1.5	13.8	4.1
Other hardwoods	93.7	19.8	11.4	14.9	61.3	6.1
All species	472.7		80.7	128.1	237.2	26.7
Percent		100.0	17.1	27.1	50.2	5.6

1/ Includes the volume in nonstocked areas.

Table 9.--Cubic volume of growing stock by stand-size class and tree-diameter class, 1949

Stand-size class	Total	6-8 inches	10 inches	12-14 inches	16-18 inches	20-22 inches	24-26 inches	28 inches and larger
	Million cubic feet							
Large saw-timber area	80.7	10.0	10.7	16.6	18.4	14.9	8.2	1.9
Small saw-timber area	128.1	28.0	25.7	48.2	16.5	8.1	.8	.8
Pole-timber area	237.2	122.3	59.5	34.0	16.2	3.4	1.8	--
Seedling and sapling area1/	26.7	17.4	3.7	2.9	1.2	.6	.9	--
All classes	472.7	177.7	99.6	101.7	52.3	27.0	11.7	2.7
Percent	100.0	37.6	21.1	21.5	11.0	5.7	2.5	.6

1/ Includes the volume in nonstocked areas.

Table 10.--Average volume per acre by stand-size class, 1949

Stand-size class	Average volume per acre	
	Board feet	Cubic feet1/
Large saw-timber area	5,230	1,090.5
Small saw-timber area	3,601	928.3
Pole-timber area	607	414.0
Seedling and sapling area2/	83	61.2
All classes	1,038	387.1

1/ Growing stock only.
2/ Includes the volume in nonstocked areas.

Table 1.--Forest and nonforest area by county, 1949

County	Total land area[1]	Forest area		Nonforest area	
	Thousand acres	Thousand acres	Percent	Thousand acres	Percent
Bell	237	201	85	36	15
Boyd	102	58	57	44	43
Breathitt	316	260	82	56	18
Carter	257	166	65	91	35
Clay	303	223	74	80	26
Elliott	154	110	71	44	29
Estill	166	121	73	45	27
Greenup	224	154	69	70	31
Jackson	216	156	72	60	28
Johnson	169	116	69	53	31
Knox	239	154	64	85	36
Laurel	287	185	64	[2]/102	36
Lawrence	272	177	65	95	35
Lee	134	106	79	28	21
Lewis	310	235	76	75	24
McCreary	270	248	92	[2]/22	8
Magoffin	194	139	72	55	28
Menifee	134	108	81	26	19
Morgan	236	154	65	82	35
Owsley	126	92	73	34	27
Powell	111	83	75	28	25
Rockcastle	200	130	65	70	35
Rowan	186	151	81	35	19
Whitley	294	214	73	[2]/80	27
Wolfe	145	97	67	48	33
All counties	5,282	3,838	73	1,444	27

1/ Source: Area of United States 1940, U. S. Bureau of the Census.
2/ Includes area of Wolf Creek Reservoir.

Table 2.--Commercial forest area by ownership class, 1949

Ownership class	Commercial forest area[1/]	
	Thousand acres	Percent
Federal:		
National forest	354	9.2
Other	2	.1
Total	356	9.3
State	31	.8
Private	3,450	89.9
All ownerships	3,837	100.0

1/ Does not include 1,000 acres of forest land reserved from commercial timber use for state parks.

Table 3.--Commercial forest area by forest type and stand-size class, 1949

Forest type	Total		Large saw-timber area	Small saw-timber area	Pole-timber area	Seedling and sapling area	Non-stocked area
	Thousand acres	Percent	Thousand acres				
Pine	155	4.0	4	73	59	19	--
Cedar-hardwoods	18	.5	--	--	--	--	18
Oak-pine	560	14.6	29	208	184	120	19
Oak-hickory	1,997	52.1	451	425	762	313	46
White oak	114	3.0	2	37	75	--	--
Beech-maple	66	1.7	27	13	17	3	6
Mixed hardwoods	887	23.1	216	83	313	200	75
Bottomland hdwds.	40	1.0	18	20	2	--	--
All types	3,837		747	859	1,412	655	164
Percent		100.0	19.4	22.4	36.8	17.1	4.3

Table 4.--Saw-timber volume by species and stand-size class, 1949

Species	Total		Large saw-timber area	Small saw-timber area	Pole-timber area	Seedling and sapling area [1]
	Million bd. ft.	Percent	Million board feet			
Virginia pine	281	3.7	9	195	73	4
Shortleaf pine	[2] 833	11.0	138	568	113	14
Redcedar-hemlock	206	2.7	169	26	11	--
White oak	598	7.9	239	259	96	4
Post-oak group	71	.9	17	28	26	--
Chestnut oak	776	10.3	426	208	121	21
Black oak	1,685	22.3	834	583	241	27
Northern red oak	417	5.5	243	137	37	--
Other red oaks	51	.7	28	14	9	--
Hickory	854	11.3	531	200	116	7
Elm	40	.5	17	13	10	--
Soft maple	64	.8	20	25	17	2
Sugar maple	46	.6	40	3	3	--
Sycamore	55	.7	28	26	1	--
Ash	73	1.0	52	17	4	--
Yellow-poplar	692	9.1	348	221	87	36
Sweetgum	49	.7	26	12	11	--
Blackgum	188	2.5	92	68	26	2
Beech	329	4.3	237	53	38	1
Black walnut	70	.9	22	24	18	6
Other hardwoods	196	2.6	137	39	13	7
All species	7,574		3,653	2,719	1,071	131
Percent		100.0	48.2	35.9	14.1	1.8

1/ Includes the volume in nonstocked areas.
2/ Includes 61 million board feet of white pine.

Table 7.--Total cubic volume of sound wood by species and class of material, 1949

Species	Total	Growing stock				Cull trees
		Total	Saw-timber trees	Pole-timber trees	Tops & limbs	
	Million cubic feet					
Virginia pine	106.3	104.2	1/ 51.2	53.0	—	2.1
Shortleaf pine 2/	181.8	181.5	1/ 140.9	40.6	—	.3
Redcedar-hemlock	40.8	39.5	1/ 34.6	4.9	—	1.3
White oak	353.5	256.5	93.9	162.6	66.5	30.5
Post-oak group	46.3	31.7	11.7	20.0	8.4	6.2
Chestnut oak	389.9	208.1	121.1	87.0	86.6	95.2
Black oak	724.7	438.1	268.9	169.2	192.1	94.5
Northern red oak	153.4	89.7	65.3	24.4	46.7	17.0
Other red oaks	20.8	12.1	8.1	4.0	5.8	2.9
Hickory	398.1	262.8	132.9	129.9	95.7	39.6
Elm	21.9	13.1	6.4	6.7	4.5	4.3
Soft maple	70.1	32.1	10.2	21.9	7.3	30.7
Sugar maple	46.2	20.8	7.3	13.5	5.3	20.1
Sycamore	18.6	11.6	8.4	3.2	6.0	1.0
Ash	37.1	23.2	11.6	11.6	8.3	5.6
Yellow-poplar	265.7	167.1	107.3	59.8	76.0	22.6
Sweetgum	19.0	13.3	7.9	5.4	5.7	(3/)
Blackgum	102.7	41.9	30.0	11.9	21.4	39.4
Beech	288.0	66.5	48.7	17.8	37.3	184.2
Black walnut	28.8	17.9	11.4	6.5	8.0	2.9
Other hardwoods	131.1	75.0	30.8	44.2	22.1	34.0
Noncommercial species	25.4	—	—	—	—	25.4
All species	4/ 3,470.2	2,106.7	1,208.6	898.1	703.7	659.8
Percent	100.0	60.7	34.8	25.9	20.3	19.0

1/ Includes tops of softwood saw-timber trees to a minimum diameter of 4 inches inside bark.
2/ Includes 9.1 million cubic feet of white pine.
3/ Less than 0.05 million cubic feet.
4/ Does not include volume of standing dead chestnut estimated to be 51.5 million cubic feet.

Table 8.--Cubic volume of growing stock by species and stand-size class, 1949

Species	Total		Large saw-timber area	Small saw-timber area	Pole-timber area	Seedling and sapling area 1/
	Million cu. ft.	Percent	Million cubic feet			
Virginia pine	104.2	4.9	2.6	52.8	45.5	3.3
Shortleaf pine	2/181.5	8.6	23.4	116.3	37.3	4.5
Redcedar-hemlock	39.5	1.9	30.4	5.9	3.1	.1
White oak	256.5	12.2	60.7	90.6	101.9	3.3
Post-oak group	31.7	1.5	4.1	14.6	12.5	.5
Chestnut oak	208.1	9.9	80.3	56.2	67.8	3.8
Black oak	438.1	20.8	159.8	148.0	123.8	6.5
Northern red oak	89.7	4.3	45.2	31.2	13.2	.1
Other red oaks	12.1	.6	4.7	2.7	4.7	--
Hickory	262.8	12.5	116.0	73.9	69.6	3.3
Elm	13.1	.6	4.0	2.6	5.9	.6
Soft maple	32.1	1.5	7.9	15.2	8.4	.6
Sugar maple	20.8	1.0	12.1	3.9	4.5	.3
Sycamore	11.6	.5	5.0	4.5	2.1	--
Ash	23.2	1.1	11.6	6.7	4.8	.1
Yellow-poplar	167.1	7.9	63.7	52.4	44.4	6.6
Sweetgum	13.3	.6	5.3	4.9	3.1	--
Blackgum	41.9	2.0	17.8	15.9	6.9	1.3
Beech	66.5	3.2	43.0	13.1	9.7	.7
Black walnut	17.9	.8	4.3	6.4	6.2	1.0
Other hardwoods	75.0	3.6	31.2	20.3	19.0	4.5
All species	2,106.7		733.1	738.1	594.4	41.1
Percent		100.0	34.8	35.0	28.2	2.0

1/ Includes the volume in nonstocked areas.
2/ Includes 9.1 million cubic feet of white pine.

Table 9.--Cubic volume of growing stock by stand-size class and tree-diameter class, 1949

Stand-size class	Total	6-8 inches	10 inches	12-14 inches	16-18 inches	20-22 inches	24-26 inches	28 inches and larger
	Million cubic feet							
Large saw-timber area	733.1	96.2	75.9	131.6	197.0	132.8	45.9	53.7
Small saw-timber area	738.1	175.5	147.3	277.5	109.3	21.2	7.3	--
Pole-timber area	594.4	267.9	166.6	110.7	34.6	14.6	--	--
Seedling and sapling area1/	41.1	14.5	6.1	7.2	8.0	3.6	1.7	--
All classes	2,106.7	554.1	395.9	527.0	348.9	172.2	54.9	53.7
Percent	100.0	26.3	18.8	25.0	16.6	8.2	2.6	2.5

1/ Includes the volume in nonstocked areas.

Table 10.--Average volume per acre by stand-size class, 1949

Stand-size class	Average volume per acre	
	Board feet	Cubic feet1/
Large saw-timber area	4,890	981.4
Small saw-timber area	3,165	859.3
Pole-timber area	758	421.0
Seedling and sapling area2/	160	50.2
All classes	1,974	549.0

1/ Growing stock only.
2/ Includes the volume in nonstocked areas.

FOREST SURVEY PROCEDURE

The inventory of the forest resources of Central Kentucky was made during the period October 1948 to November 1949. A sampling procedure was used involving an office study of aerial photographs and a field examination of randomly selected forest and nonforest plots.

The proportion of forest land in each county was obtained by placing a transparent template marked with uniformly spaced dots over aerial photographs and by counting the number of dots falling on forest and nonforest areas. The percentage of the dots in a county that was forest, multiplied by the total area gave a preliminary estimate of the forest area. This was later adjusted after field examination.

The location of a selected number of dots falling on forest land was marked on the photographs. The acre surrounding each marked dot was examined under stereoscope and was classified by stand-size class on the basis of the height, crown width, and density of trees on the plot. Plots to be examined in the field were randomly drawn from those classified under stereoscope. In making this selection the greatest weight was given to the stand-size classes containing the largest timber volume. In addition, a number of nonforest plots was selected for field examination to measure the movement of open land to forest since the date of photography.

The locations of the selected field plots were marked on the photographs, which were then sent to the field. Crews of two men each located these points on the ground. On forest land a 1/5-acre plot was established on which forest conditions were described and the species, size, quality, and growth of trees were recorded.

The following tabulation gives the number of dots and plots examined for each of the four regions.

	Western Coalfield Region	Pennyroyal Region	Bluegrass Region	Cumberland Region
Number of photo dots counted for forest-area determination	32,296	24,085	33,477	28,878
Number of forest plots stereoscopically examined on photos	2,070	2,155	1,450	3,789
Number of forest plots field examined	418	362	224	694
Number of nonforest plots field examined	160	100	161	118

ACCURACY OF DATA

Statistical analysis of forest area and timber volume data shows the following sampling errors[1] for each of the four regions.

Region	Forest area		Saw-timber volume	
	M acres	Percent	Million cu. ft.	Percent
Western Coalfield	38.5	2.2	42.4	3.9
Pennyroyal	76.0	3.6	45.5	3.7
Bluegrass	87.9	7.2	30.3	6.4
Cumberland	80.6	2.1	56.9	2.7

175.8

These estimates of sampling error do not include errors resulting from the development and application of volume tables and cull factors, or from mistakes in measurement or judgment. All phases of field and office work were closely supervised to keep these errors to a minimum. Since the percentage error increases with each subdivision of the total, small acreages or volumes may have large errors and may therefore indicate only relative magnitudes.

1/ At one standard deviation; i.e., the chances are two out of three that, if the survey were repeated, the total forest area or volume figures would not differ more than the errors shown in this table.

15 6 / 7 1 / 9 0 / 3 1 6

EXPLANATION OF TERMS USED

Forest land.--Land bearing forest growth or land from which the forest has been removed but which shows evidence of past forest occupancy and which is not now in other use. To qualify as forest, an area must (1) be at least 100 feet wide; (2) be at least 1 acre in area; (3) have a sufficient number of trees to provide 10 percent crown coverage; or (4) lacking 10 percent crown coverage, be likely to remain in forest use.

Commercial forest land.--Forest land bearing or capable of bearing timber of commercial character and economically available now or prospectively for commercial use and not withdrawn from such use.

Reserved forest land.--Forest land that has been withdrawn from timber utilization through statute, ordinance, or administrative order.

Noncommercial forest land.--Forest land incapable of yielding usable wood products because of adverse site conditions, or so physically inaccessible as to be permanently unavailable economically, and not withdrawn for specified purposes.

Forest types

Pine.--Stands in which pine species comprise at least 60 percent of the dominant and codominant trees.

Cedar-hardwoods.--Stands in which redcedar comprises at least 20 percent of the dominant and codominant trees.

Oak-pine.--Stands of pines, oak, and other hardwoods in which pines comprise 20-60 percent of the dominant and codominant trees.

Oak-hickory.--Stands of hardwoods in which oaks and hickories comprise at least 60 percent of the dominant and codominant trees.

White oak.--Stands in which white oak (Quercus alba) comprises at least 60 percent of the dominant and codominant trees.

Beech-maple.--Stands in which beech and sugar maple comprise at least 60 percent of the dominant and codominant trees.

Mixed hardwoods.--Stands of mixed hardwood species not qualifying for other hardwood types. Principal species include yellow-poplar, elm, maple, basswood, ash, beech, hemlock, and black locust in mixture with oaks and hickories.

Bottomland hardwoods.--Stands on the alluvial bottoms of rivers and streams. The principal species include sycamore, willow, elm, blackgum, sweetgum, soft maple, oaks, hickory, cottonwood, and cypress.

Tree classes

Saw-timber tree.--A live softwood (coniferous) tree at least 9.0 inches d.b.h. or live hardwood trees of commercial species at least 11.0 inches d.b.h., with a sound butt log at least 8 feet long, or with at least half of the gross volume of the tree in sound material.

Pole-timber tree.--A live tree at least 5.0 inches d.b.h. but less than saw-timber size that gives promise of becoming a saw-timber tree.

Cull tree.--A live tree at least 5.0 inches d.b.h. that does not qualify as a saw-timber or pole-timber tree because of species, poor form, limbiness, rot, or other defect.

Volume estimates

Board-foot volume includes the volume of that portion of saw-timber trees merchantable for sawlogs. Volume deductions have been made for rot, crook, and other defects. Board-foot volumes are shown in the International 1/4-inch log rule, which approximates green lumber tally.

Cubic-foot volume

Total volume includes the sound wood inside bark in both sound and cull living trees 5.0 inches d.b.h. and larger, from the stump to a minimum top diameter of 4.0 inches inside bark. It includes the upper stems of softwood trees and the upper stems and limbs of hardwoods.

Growing stock includes the volume of sound wood inside bark in (1) the sawlog portion of saw-timber trees, (2) the upper stem of softwood saw-timber trees to a minimum top diameter of 4.0 inches inside bark, and (3) pole-timber trees to a minimum top diameter of 4.0 inches inside bark.

Stand-size class

Large saw timber.--Stands having a minimum net volume of 1500 board feet per acre in saw-timber trees, and having more than half of this volume in trees 15.0 inches d.b.h. and larger.

Small saw timber.--Stands having a net volume of 1500 board feet per acre in saw-timber trees, and having at least half of this volume in trees smaller than 15.0 inches d.b.h.

Pole timber.--Stands failing to meet the saw-timber stand specifications, but at least 10 percent stocked with pole-timber and larger trees and with at least half the minimum stocking in pole-timber trees.

Seedlings and saplings.--Stands not qualifying either for saw timber or pole timber but having at least 300 seedlings and saplings of commercial species per acre.

Nonstocked.--Commercial forest land not qualifying for any other class.

Hardwood log grades

Grade 1.--Logs at least 14.0 inches in diameter inside bark with five-sixths of the surface on the three best faces clear of defect in not more than two cuttings. Lumber from such logs will normally grade at least 60 percent No. 1 common and better.

Grade 2.--Logs at least 12 inches in diameter inside bark with two-thirds of the surface on the three best faces clear of defect in not more than three cuttings. Lumber from such logs will normally grade at least 35 percent No. 1 common and better.

Grade 3.--Merchantable logs at least 8.0 inches in diameter inside bark which do not meet the requirements of higher grades. Such logs will normally produce less than 35 percent No. 1 common and better lumber or will be suitable only for ties or timbers.

Species listed

Softwoods

Virginia pine	-	Pinus virginiana
Shortleaf pine includes:		
Shortleaf pine	-	Pinus echinata
Pitch pine	-	Pinus rigida
White pine	-	Pinus strobus
Cypress	-	Taxodium distichum
Redcedar	-	Juniperus virginiana
Hemlock	-	Tsuga canadensis

Hardwoods

White oak	-	Quercus alba
Post oak group includes:		
Post oak	-	Quercus stellata
Swamp white oak	-	Quercus bicolor
Swamp chestnut oak	-	Quercus prinus
Overcup oak	-	Quercus lyrata
Bur oak	-	Quercus macrocarpa
Chinquapin oak	-	Quercus muehlenbergii
Chestnut oak	-	Quercus montana
Black oak includes:		
Black oak	-	Quercus velutina
Scarlet oak	-	Quercus coccinea

Northern red oak includes:
- Northern red oak - Quercus borealis
- Swamp red oak - Quercus falcata var. pagodaefolia

Other red oaks include:
- Southern red oak - Quercus falcata
- Pin oak - Quercus palustris
- Willow oak - Quercus phellos
- Water oak - Quercus nigra
- Shingle oak - Quercus imbricaria

Hickory - Carya species

Elm - Ulmus species

Soft maple includes:
- Red maple - Acer rubrum
- Silver maple - Acer saccharinum
- Boxelder - Acer negundo

Sugar maple - Acer saccharum

Sycamore - Platanus occidentalis

Ash - Fraxinus species

Yellow-poplar - Liriodendron tulipifera

Cottonwood - Populus deltoides

Sweetgum - Liquidambar styraciflua

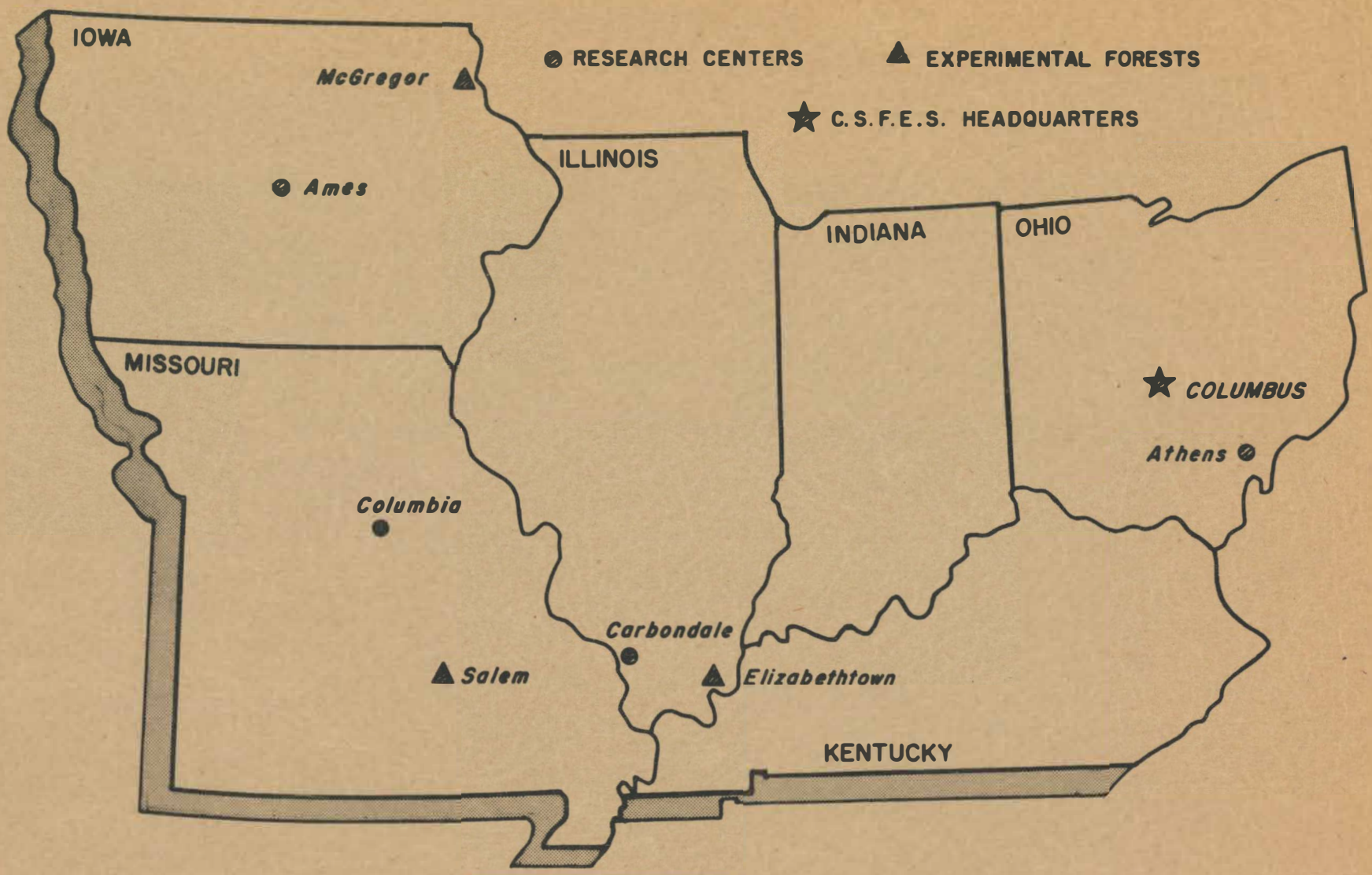
Blackgum - (Nyssa sylvatica
(Nyssa aquatica

Beech - Fagus grandifolia

Black walnut - Juglans nigra

Other hardwoods - include all other commercial hardwood species.

Noncommercial species - include species that do not normally have commercial value such as hawthorn, redbud, hornbeam, hophornbeam, alder, and serviceberry.



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